



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

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Surface Water

(Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

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Ground Water

(Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 8, 2004	G2-30183		

NAME			
Triway Investments LLC - c/o Tri M. Vo			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
5047 Cooper Point Road NW	Olympia	Washington	98502

PUBLIC WATERS TO BE APPROPRIATED

SOURCE		
5 Wells, to be drilled		
TRIBUTARY OF (IF SURFACE WATERS)		
MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	300	18
QUANTITY, TYPE OF USE, PERIOD OF USE		
18 Acre-feet per year	Multiple domestic supply Year-round, as needed	

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
To be drilled

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
E½ SW¼ and W½ SE¼	32	19	2W	13	Thurston

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The East half of the Southwest quarter and the West half of the Southeast quarter of Section 32, T. 19 N., R. 2 W.W.M., excepting therefrom County Road known as Sunset Beach Road and County Road known as Adams Road and except that part lying Northwesterly of County Road known as Sunset Beach Road. In Thurston County, Washington.

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DESCRIPTION OF PROPOSED WORKS

The wells will be 6 inches in diameter and approximately 150 feet in depth.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE: Started	COMPLETE PROJECT BY THIS DATE: October 1, 2007	WATER PUT TO FULL USE BY THIS DATE: October 1, 2008
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REPORT

BACKGROUND:

On March 8, 2004, Sandra Miller, on behalf of Intercontinental Investments, Inc., filed an application to withdraw public groundwater at a rate of 300 gallons per minute (gpm) from eight wells for multiple community supply for 45 residences. On September 24, 2004, the application was assigned to Triway Investments, LLC. The project site is located in the Deschutes River Watershed in Water Resources Inventory Area (WRIA) 13.

Public notice was published in The Olympian on March 18 and March 25, 2004. No letters of protest were received.

Based on the provisions of Chapters 90.03 and 90.44 Revised Code of Washington (RCW), I recommend approval of this application.

INVESTIGATION:

In consideration of this application, a field investigation was conducted on October 27, 2004. Other investigations included a review of recorded water rights, registered claims, water well reports, information submitted with the application, and additional information supplied by the applicant.

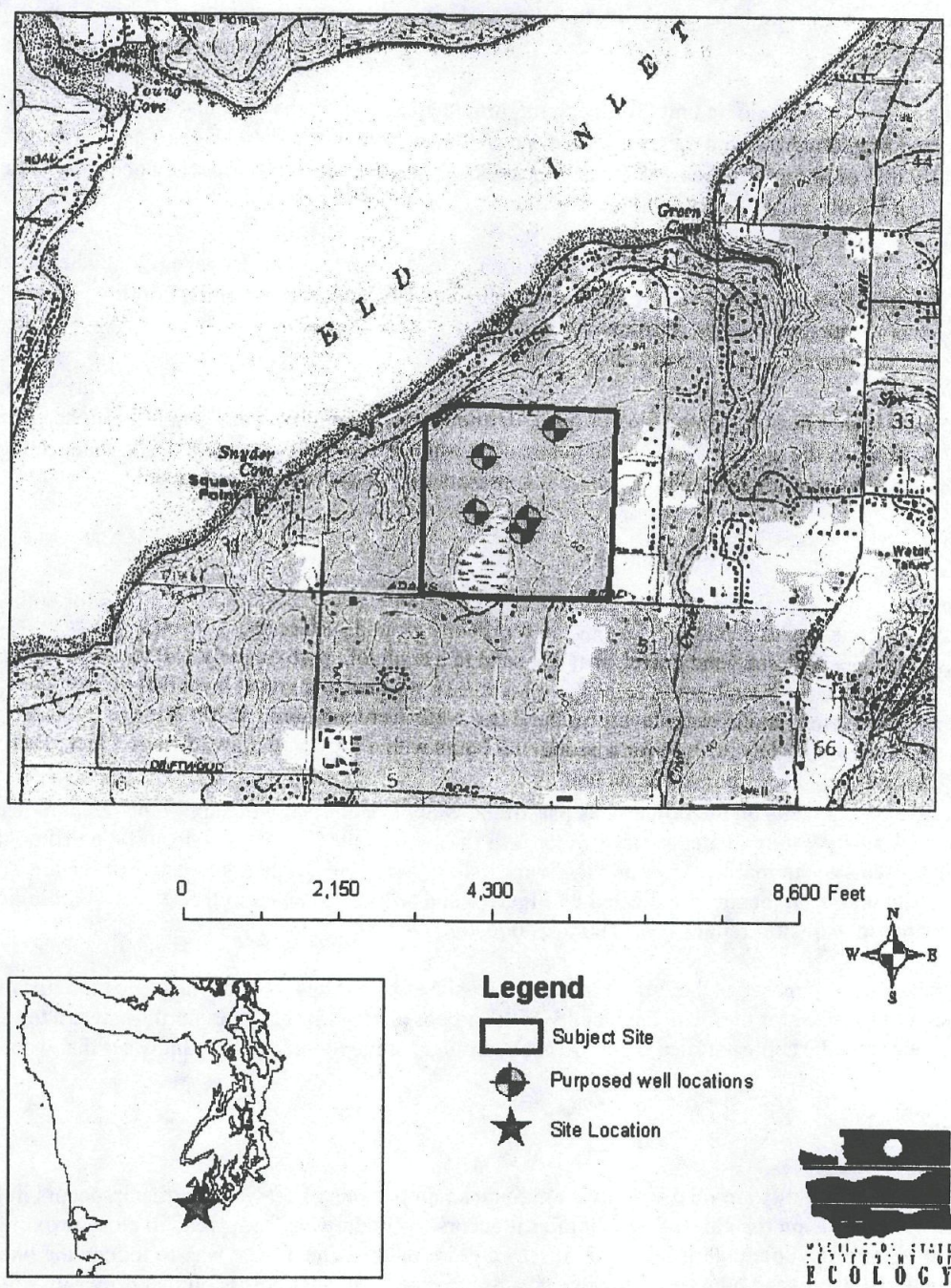
The project site is located approximately 3 ½ miles south of the tip of Cooper Point Peninsula on property that looks north westward across Eld Inlet (Figure 1). At the project site location, the peninsula varies in width from 1 ½ to 2 miles. Land use in the surrounding area is rural residential with clusters of medium density developments. Residential lots in the surrounding area range in size from less than one acre to more than ten acres. The subject property is generally wooded and undeveloped.

The subject property consists of 159.7 acres that has been chosen for a proposed 45 house development. The subject property is located in Section 32 of T19N, R2W in the Sunset Beach/Squaw Point/Green Cove area of the Cooper Point Peninsula (Figure 1). The land surface is roughly bowl shaped with undulating terrain. There are three distinct upland areas that consist of two wetlands, one occupying the central portion of the property and another located on the western border, ravines occupied by seasonal streams on the western and northern borders, and the steep bluffs along Sunset Beach Road that overlook Eld Inlet along the northwest property margin. For the most part, the topographic relief on the accessible portions of the property varies by 35 feet.

For the most part, residential development on the property will be sited toward the periphery, leaving the remaining 97.5 acres as a resource parcel which occupies the central portion. The residential units will be supplied water from a total of 5 wells. Washington Department of Health (DOH) has approved the project as 5 Group B water systems. The property is currently undeveloped. The applicant anticipates the project to be completed by October 2007.

The project received a "Mitigated Determination of Non-Significance" in 1999 under the State Environmental Policy Act (SEPA).

Figure 1. Maps showing site location and location of wells for Application No. G2-30183 located in Section 32, T19N R2W.



General Area Hydrogeology

The presented geologic/ hydrogeologic information was extracted from a Department of Ecology Memorandum dated October 28, 2004 prepared by Tammy Hall, licensed hydrogeologist at Southwest Regional Office's Water Resources Program.

The presented geologic/ hydrogeologic information was compiled from the following references:

- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1999, *Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the Unconsolidated Sediments of Thurston County, Washington*: US Geological Survey Water Resources Investigations Report 99-4165.
- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1998, *Hydrology and Quality of Ground Water in Northern Thurston County, Washington*: US Geological Survey Water-Resources Investigations Report 92-4109 (revised).

A series of glacial advances and retreats is largely responsible for the resulting landscape in the Puget Sound area. These episodes of glaciation have been marked by layers of unconsolidated deposits more than 2,000 feet deep in some areas of Thurston County. Unconsolidated deposits found on the Cooper Point Peninsula may be greater than 500 feet deep and generally become thicker northward towards Cooper Point.

These unconsolidated deposits may be glacial or non-glacial in origin. The non-glacial deposits were left by streams carrying meltwater or by water that was impounded behind masses of ice. Glacial deposits, described as tills or hardpan, were deposited directly by the glacier.

Glacial aquifers may be composed predominately of sand and (or) gravel, but may also contain relatively thin and discontinuous lenses of clay and (or) silt. In addition, confining layers composed predominately of silt and (or) clay, may also contain local lenses of coarse sand or gravel. The deposits are referred to as "geohydrologic" units because they were identified using a combination of geologic (primarily grain size and sorting) and hydrologic (hydraulic conductivity and hydraulic continuity) properties.

The unit exposed at the ground surface in the area of the subject site is geohydrologic unit Qvt. The Qvt is composed of Vashon-age till, and possibly some older tills. The unit Qvt is generally considered a poor source of water.

Underlying the Qvt, is the Kitsap Formation (Qf). The Qf is composed of predominately poorly permeable materials, but thin lenses of sand and gravel can yield relatively small quantities of water suitable for domestic use. It is also effective in retarding the downward percolation of groundwater into the underlying units and has the ability to act as a confining layer to those materials lying below it. Qf is generally between 15 and 75 feet thick.

The Vashon advance outwash, represented as geohydrologic unit Qva, is an important aquifer in northern Thurston County. In the Cooper Point Peninsula area, the unit is relatively thin or absent, and therefore has not been developed extensively. Where it is present, Qva is generally between 15 and 35 feet thick, but locally may exceed 150 feet in thickness. The top of the Qva generally occurs between 50 and 200 feet above sea level (msl).

Underlying the Qf and Qva are coarse-grained Salmon Springs (?) Drift, penultimate deposits, and other deposits (Qc). The Qc unit is one of the most widely used aquifers in Northern Thurston County. Groundwater in this unit generally occurs under confined conditions. Where the entire thickness of Qc has been penetrated, it is generally about 30 feet thick.

Groundwater generally flows from areas of higher head to areas of lower head. Groundwater generally moves toward marine water bodies and to surface drainage channels. Beneath the upland areas on the peninsulas, water levels in Qva are generally higher than Qc, indicating that water flows vertically downward, passing through Qf, where it is present and discharging to either salt water or to surface water drainages.

Hydrologic Analysis

In 2003, two wells were drilled on the subject property to depths of 152 and 156 feet below ground surface (bgs). Well logs for both wells describe drilling through alternating layers of fine sand, sand and gravel, and silty sand to a depth of approximately 150 feet bgs. From 150 feet to the total depth drilled, a clay layer is intercepted. Both wells are screened in a water-bearing sand and gravel layer that occurs roughly between 135 to 140 feet bgs (45 to 40 feet above msl). Static water levels for these two wells were measured at 100 feet bgs (84 feet above msl). Each well was pump tested at a rate of approximately 30 gpm for a period of 4 hours with a measured drawdown of 3 feet. Based on available information, these wells draw water from the Qc geohydrologic unit.

The original intent was to use these two existing wells on the property as part of the water system that will supply the development. However, due to the location of these well relative to regulated surface water near the subject site, five new wells will be drilled in locations that capture groundwater that discharges to marine water and the two existing wells will be abandoned as a provision of the issuance of this permit. These 5 new wells will be at locations indicated on Figure 1 and will be screened in the Qc geohydrologic unit. The surface elevation at each of the proposed well sites ranges from 180 to 200 feet above msl.

Drost (1998) has identified the geohydrologic unit exposed at the surface at the project site as being the Qvt geohydrologic unit. Information in Drost (1998) indicates that the potentiometric surface for the Qc in the vicinity of the proposed withdrawal slopes northwestward towards Eld Inlet. Wells installed at the locations selected by the applicant sited in the Qc geohydrologic unit will intercept groundwater that would otherwise discharge to marine water.

Seawater Intrusion in Thurston County

In general, chloride concentrations in Thurston County are relatively low, although small pockets of seawater intrusion occurs in localized areas. It is much easier to prevent seawater intrusion than to deal with it after it occurs. Withdrawals from wells in close proximity to the marine water, such as the proposed wells, have the potential to be at risk of seawater intrusion. The easiest way to reduce the likelihood of seawater intrusion in areas at potential risk is to keep pumping rates low so a pronounced cone of depression that draws up salt water does not develop. The Maximum Contaminant Level (MCL) allowed according Federal standards for chloride is 250 mg/l.

Available data from wells in the area indicates chloride concentrations are relatively low. Analytical data summarized Drost (1998) lists chloride concentrations for three wells located within ½ mile from the subject site. Data collected from two of the wells in 1978 and in 1989 lists concentrations of chlorides less than 3 mg/l. Both of these wells were sited in the Qc hydrologic unit.

Because the wells to be drilled as part of the proposed development will draw water from an aquifer near sea level and are in close proximity to marine water (less than one mile), there is risk of seawater intrusion. The system operator should take mitigative measures to prevent capturing seawater, such as keeping pumping rates low so that a pronounced cone of depression does not develop. To help monitor water quality, it is suggested that the system operator system test for chlorides on an annual basis.

Neighboring Water Users

Water rights and well logs for wells completed within a ½ mile radius of the proposed well locations were examined in order to determine if pumping would impair other water right holders. A radius of ½ mile was selected for a search radius based on aquifer properties.

Two water right certificates and one permit have been issued that fall within this ½ mile radius. Details of each are listed below.

- Certificate No. G2-01037 was issued to Olympia Oil and Wood Products in April 1976 for community domestic supply in the amount of 900 gpm and 104 ac-ft per year from a well 228 feet in depth. This well is located ½ mile north of the proposed development on waterfront property along Eld Inlet. A well report for the well indicates that it is a flowing well and it is likely drawing water from the TQu geohydrologic unit.
- Certificate No. G2-25240 was issued to South Sound Utility Company in August 1983 for group domestic supply in the amount of 22 gpm and 6.5 ac-ft per year from a well 157 feet in depth. This well is located ¼ northeast of the subject property. A well report for the well indicates that the well is likely drawing water from the Qc geohydrologic unit.
- Permit No. G2-28779 was issued to South Sound Utility Company in May 1996 for multiple domestic supply in the amount of 130 gpm and 43.5 ac-ft per year from a well 157 feet in depth. This well is located approximately ¼ mile northeast of the subject property. A well report for the well indicates that the well is likely drawing water from the Qc geohydrologic unit.

Based on the information provided by Drost (1998) the withdrawal points for these permit/certificates lie cross-gradient from the well sites chosen for the purposed development and also intercept groundwater discharging to marine water. It is unlikely that withdrawals associated with these new wells would impair these existing water rights.

In addition to the above, Department of Ecology records show the following additional water rights, claims, and other wells that may be located within ½ mile radius from the subject property:

- A total 5 surface water rights certificates have been issued authorizing a combined instantaneous diversion of 0.3 cubic feet per second (cfs). Water use is from springs and is used mostly for single domestic supply, irrigation, fish propagation, and fire protection.
- The Department of Ecology's well log data base listed approximately 44 wells. The wells range in depth from 40 feet to 360 feet in depth and draw water from TQu, Qc and perched zones within the Qvt.
- Department of Ecology records list approximately 46 water right claims.

Due to the geographic nature of the area, it is likely that most of the water use in the area is from wells that lie within a short distance from the shore line or lie cross-gradient from the subject property and intercept water discharging directly to marine water. As such, it is not expected that area users will be impaired by withdrawals associated with this project.

Effects to Surface Water

Minimum instream flows were established in 1981 through Chapter 173-513-040 WAC, the Instream Resources Protection Program for the Deschutes River Basin Water Resource Inventory Area (WRIA) 13. Any groundwater withdrawals with priority dates later than the closure dates stated in the WAC must not impair instream flows.

The subject property is located ¼ mile west of an unnamed stream identified in 1980 in the WAC as having low-flow provisions. This stream drains the glacial drift plain that comprises the lower portion of the Cooper Point Peninsula, flowing due northward and emptying into Green Cove and Eld Inlet.

Available information indicates that the well sites selected for this proposed development will intercept groundwater that is directly discharging to Eld Inlet. Potentiometric maps in Drost (1998) indicate that groundwater in the Qc geohydrologic unit flows northwestward across the Triway property directly towards Eld Inlet. As such, withdrawals associated with this project are not expected to impair regulated surface water in WRIA 13.

WATER DEMAND:

The water system for the proposed development will be operated as 5 Group B water systems that will supply water to 45 connections. Withdrawals will be managed such that the combined instantaneous withdrawal rate authorized by this permit is not exceeded.

The average daily demand is calculated based on Department of Health (DOH) guidelines according to the following mathematical equation:

$$ADD = \left(\frac{8000}{AAR} \right) + 200$$

Where: **ADD** = Average Day Demand, (gallons-per-day/ERU)

AAR = Average Annual Rainfall, (inches-per-year)

Using climatic information for Olympia, the average daily demand for 45 residences should not exceed 360 gallons per day per residence. The total water demand for this project should not exceed 18 ac-ft per year. This calculation assumes an annual water usage of .4 ac-ft per residence.

FINDINGS AND CONCLUSIONS:

- Based on the hydrogeology of the area, the completed depth of the proposed wells, and the proximity of those wells to Eld Inlet, the wells will draw water from an aquifer directly discharging to marine water. As such, this withdrawal will not impair surface water flows in the Deschutes River Watershed.
- The water will be put to beneficial use for multiple domestic supply.
- The issuance of this water right will not be detrimental or impair any senior water right holders.

RECOMMENDATIONS:

Based on the provisions of 90.03 and 90.44, I find that water available for appropriation and would not impair existing rights. I recommend the issuance of a water right permit for multiple domestic supply in the amount of 300 gpm and 18 ac-ft per year. The time of use is year-round as needed.

PROVISIONS:

"The two wells that currently exist on the property will be properly abandoned in accordance with Chapter 18.104RCW."

Report Continued

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

The applicant is advised that notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the permanent distribution system has been constructed and that quantity of water allocated by the permit to the extent water is required, has been put to full beneficial use.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units, monthly meter readings including units, Department of Health WFI water system number and source number(s), purpose of use, well tag number and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

A completed well report of the well(s) shall be submitted by the driller to the Department of Ecology within 30 days of completing this well. All pump test data for this well shall be submitted to the Department as it is obtained.

All wells constructed in the State shall meet the construction requirements of Chapter 173-160 WAC entitled "Minimum Standards for the Construction and Maintenance of Wells" and Chapter 18-104 RCW entitled "Water Well Construction".

In accordance with Chapter 173-160 WAC, wells shall not be located within certain minimum distances of potential sources of contamination. These minimum distances shall comply with local health regulations, as appropriate. In general, wells shall be located at least 100 feet from sources of contamination. Wells shall not be located within 1,000 feet of a solid waste landfill.

Installation and maintenance of an access port as described in Chapter 173-160 is required. An air line and gauge may be installed in addition to the access port.

The subject well shall be tagged with a well identification number. This unique well number shall remain attached to the well, please reference this number when submitting data.

Permittee or certificate holder, and its successor(s) shall provide data on chloride concentrations for the well authorized by this permit or certificate with analysis performed by a state accredited laboratory. Accreditation information may be obtained from Ecology's Quality Assurance Program at (360) 895-4649. Sampling shall occur in April and August of each year, with a copy of the laboratory results for both sampling events submitted by January 31 of the following year, to the Department of Ecology, Southwest Regional Office, Olympia, Washington.

If pumping of the well authorized by this permit or certificate causes chloride concentrations to exceed 100 milligrams per liter, immediate action shall be required to prevent concentrations from increasing (such as reducing the instantaneous withdrawal rate (gpm) of the well). If corrective measures fail to prevent chloride concentrations from exceeding said level in the future, permittee or certificate holder shall relinquish the option to perfect additional allocated quantities regardless of the stage of development.

The Water Quality Monitoring data shall be submitted in digital format and shall include the following elements:

1. Unique Well ID Number
2. Sampling date and time
3. Chloride concentration (mg/L)
4. Submit paper copy of laboratory report

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

In order to help protect your water right from potential future impairment by junior water users, it is important that a record be established of accurate water-level measurements for your well. As such, it is recommended that you measure and record the water level in your well quarterly, using a consistent methodology. This information will be most useful if these measurements are taken after your well has returned to a static (recovered aquifer) condition. In the absence of this, then next best option is to maintain consistency regarding the length of the pumping and recovery period prior to each measurement. For maximum usefulness, data collected should include the following elements:

1. Unique Well ID Number (if available)
2. Description of the measuring point (top of casing, sounding tube, etc.)
3. Measuring point elevation above or below land surface to the nearest 0.1 foot
4. Land surface elevation at the well head to the nearest foot
5. Measurement date and time
6. Measurement method (air line, electric tape, pressure transducer, etc.)
7. Well status (pumping, recently pumped, etc.)
8. Water level accuracy (to nearest foot, tenth of foot, etc.)
9. Depth to static water level below measuring point to the nearest 0.1 foot.

The first four items listed should remain constant from one measurement to the next.

Issuance of this water right may be subject to implementation of the minimum requirements established in the Conservation Planning Requirements, Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

REPORTED BY:  Date: December 30, 2004

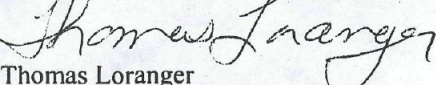
The statutory permit fee for this application is \$20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-30183, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this _____ day of _____, 2004.


Thomas Loranger
Water Resources Section Manager
Southwest Regional Office

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